Attorney's Docket No.: 14083-004002

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Roger Proksch Art Unit : 2856
Serial No.: 10/683,546 Examiner : Daniel Sean Larkin
Filed : October 10, 2003
Title : APPARATUS AND METHOD FOR ISOLATING AND MEASURING MOVEMENT IN METROLOGY APPARATUS

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REQUEST FOR INTERFERENCE UNDER 37 CFR 41.202

The applicant hereby requests an interference with U.S. Patent Number 6,612,160 and U.S. Patent Number 6,530,268. The requirements of 37 CFR 41.202 are satisfied herein.

37 CFR 41.202(a)(1) - An interference is being requested with U.S. Patent Number 6,612,160 and U.S. Patent Number 6,530,268.

37 CFR 41.202(a)(2) - Proposed Counts 1 & 2 follow:

CERTIFICATE OF TRANSMISSION BY FACSIMILE

I hereby certify that this correspondence is being transmitted by facsimile to the Patent and Trademark Office on the date indicated below.

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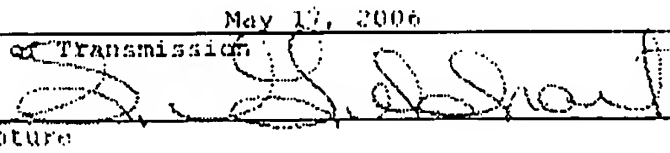

Signature

S. Gebhart
Name of Person Signing Certificate

Count 1

1. An assembly comprising:

an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;

a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and

a coupling having first and second ends, said first end being fixed to said actuator proximate to a free end of said coupling, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.

Count 2

26. A method for measuring movement of an actuator in a metrology apparatus, the method comprising:

providing a movable bar assembly coupled to the actuator and to a reference structure; and

measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.

Count 1 corresponds exactly to Claim 1 of the present application, and corresponds almost exactly, with a few minor changes (see Appendix A), to Claim 10 of U.S. Patent Number 6,612,160.

Count 2 corresponds exactly to Claim 26 of the present application, and corresponds almost exactly, with a few almost insignificant changes, to claim 40 of U.S. Patent Number 6,612,160 (see Appendix B).

A plurality of claims of the present application, as well as the '160 patent and the '268 patent, correspond to the different counts.

As will be demonstrated herein, each of Claims 1-9, 10-17, 21- 23, 24-39 and 52-63 of the' 160 patent correspond to count 1. Each of Claims 12-19 of the '268 patent also correspond to count 1.

Claims 42-51 of the '160 patent correspond to count 2.

37 CFR 41.202(a)(3) comparing claims to the count and explanation of how the claims interfere (37 CFR 41.203(a)).

The dependent claims also demonstrate two-way unpatentability relative to the subject matter of the counts.

Appendix C shows a claim chart comparing claims of the present application to the '160 patent.

Claim 2 of '160 defines that the actuator is tubular in

shape. Actuators have conventionally been tubular in shape, and all tubular in shape devices have a circular cross-section. Therefore, there is no patentable significance of this limitation, and the claim 2 and the count 1 are hence unpatentable over each other.

Claim 3 of 160 specifies that the first and second orthogonal directions are in a plane that is perpendicular to the longitudinal axis of the first stage. This positional layout is inherent within claim 1.

Claim 4 specifies that the reference structure is coaxial with the actuator. This is one of many different possible layouts, and adds no patentable significance.

Claim 5 specifies that the multi-bar linkage is a four bar parallelogram. Four bar parallelograms are well-known in the art, and have been extensively used for structure and for transmitting force. Accordingly, this is no patentable significance.

Claim 6 defines more aspects of the four bar parallelograms including flexible joints, and that the joints are machined out of solid blocks. These are conventional ways of forming these structures, and of no patentable significance. Claim 7 defines that one of the links includes a mirror that deflects around the joints, and again this is a conventional way of detecting

position and adds no patentable significance.

Claim 8 specifies that the metrology apparatus is a scanning probe microscope, which is one obvious use of this device and is no patentable significance: In addition, this claim is identical to many claims within applicants' specification including claim 7.

Claim 9 defines that the actuator is the piezo electric actuator, which is a very conventional actuator, and adds no patentable significance.

Claim 11 specifies that the actuator has asked why NZ translating sections. Since there are only a relatively few different possible ways of translating in the three orthogonal directions required by the count, is there no patentable significance.

Claim 12 defines that the reference structure is mechanically independent from the translation of the z-axis translating section, but mechanically responsive to the x and y translating sections. This follows from the subject matter of claim 10, and does not add any patentable significance.

Claim 13 defines that the reference structure is fixed to the multiple bar linkage. This is already present in claim 10, and adds no patentable significance. Claim 14 defines that the multiple bar linkage includes mirrors thereon, see the

discussion of claim 7 above which shows that mirrors had no patentable significance.

Claim 15 defines a chassis supporting the assembly. Chassis are conventional in the art, and this adds no patentable significance.

Claim 16 defines that the assembly and chassis define a scanning probe microscope. This is one obvious use of the device, and thus adds no patentable significance.

Claim 17 defines that the actuator is the piezo electric actuator, see the discussion of claim 9 above.

Claim 19 defines that the actuator provides translation in a plane that is substantially perpendicular to the longitudinal direction, and describes the lateral deflections which are carried out.

Claim 20 defines that the deflections are monitored, which is a conventional way to monitor movement.

Claim 22 defines a cantilevered probe. Cantilevered probes are conventional in this type of device.

Claim 23 defines a second electromagnetic radiation detector; more room devices of this type conventionally have many different kinds of electromagnetic radiation detectors.

Claims 25 defines an optical measuring device which utilizes conventionally used laser beams.

Claim 26 defines the movable bar assembly with reflecting device. This assembly is conventional and adds no patentable significance, see discussion of claims 7 and 14 above.

Claim 27 defines the multiple part construction of the bar. This is conventional, see above.

Claim 28 defines reference structures of the tubular type and a coaxial type. Structures of this type are conventional.

Claim 29 is conventional and devices of this type that the reference structure allows the beam to pass therethrough.

Claim 30 defines a reference structure. Since the reference structure may be hollow, it is conventional that it has an inner surface.

Claim 31. It is conventional for surfaces which conduct light to have reflective inner surfaces.

Claim 32. The multiple link bar assembly is conventional, see above.

Claim 33. The four bar assembly is conventional, see above.

Claim 34. Optical measuring devices conventionally include the lenses.

Claim 35. Lenses conventionally have magnification.

Claim 36. Devices of this type typically have light sources, and the position of mounting of the light source adds no patentable significance.

Claim 37. See discussion of claim 35 above.

Claim 38. Devices of this type are conventionally used in scanning probe microscopes, see above.

Claim 39. Actuators of this type can conventionally be piezo electric actuators, see above.

Claim 41. The multiple part link assembly is conventional, see above.

Claim 43. Devices of this type conventionally have a reference frame that is a linear with the longitudinal axis of the actuator.

Claim 44. The movable bar assembly with the reflector has no patentable significance, see discussions above.

Claim 45. The reference frame with the inner surface and reflective surface within that inner surface adds no patentable distinctions, see above.

Claim 46. The passage of the beam through the reference frame adds no patentable significance, see above.

Claim 47. Devices of this type conventionally include a source, and the coupling to the actuator is of no patentable significance, see above.

Claim 48. Devices of this type conventionally include a lens, see claim 34 above.

Claim 49. The direction of the source relative to the actuator movement adds no patentable significance.

Claim 50. The lens has no patentable significance.

The remaining dependent claims have no patentable significance for allowable analogous reasons to those discussed above.

37 CFR 41.202(a)(4). Detail why the applicant will prevail on priority.

The applicant will prevail on priority because the previous patents do not properly list the proper inventive entity. Accordingly, the inventive entity listed on the' 160 patent has no entitlement to any filing date. In contrast, the inventive entity listed on the present application is in fact entitled to the earliest filing date. Therefore, the inventive entity listed on this application will prevail on priority.

37 CFR 41.202(a)(5). No claim has been added or amendment amended in order to provoke this interference. Accordingly, no claim chart is necessary.

37 CFR 41.202(a)(6). No constructive reduction to practice is requested.

Attorney's Docket No.: 14083-004002

Please apply the RCE fee in the amount of $395, the three month extension of time fee in the amount of $510, and any other applicable charges or credits, to Deposit Account No. 06-1050.

Respectfully submitted,

Date: May 17, 2006

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APPENDIX A

Count 1	Claim 10 of 6,612,160	
An assembly comprising:	An assembly comprising:	
an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;	an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;	If the subject matter of claim 10 was prior art relative to our count 1, it would have anticipated or rendered obvious the subject matter. If the subject matter of our claim 1 was prior art it would have anticipated or rendered obvious the subject matter. This test is referred to throughout the remainder of this document as "two-way unpatentability" which should be understood to encompass both two-way obviousness and two-way anticipation
a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and	a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and	The limitations are identical and therefore enjoy two-way unpatentability
a coupling having first and second ends, said first end being fixed to said actuator proximate to its free end, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.	a coupling having first and second ends, said first end being fixed to said actuator proximate to a free end **of said coupling,** and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.	The limitations are identical and therefore enjoy two-way unpatentability

Count 1	Our Claim 1
An assembly comprising:	An assembly comprising:
an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;	an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;
a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and	a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and
a coupling having first and second ends, said first end being fixed to said actuator proximate to its free end, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.	a coupling having first and second ends, said first end being fixed to said actuator proximate to a free end **of said coupling**, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.

APPENDIX B

Count 2	Claim 40 of 6,612,160	
A method for measuring movement of an actuator in a metrology apparatus, the method comprising:	A method for measuring movement of an actuator in a metrology apparatus, the method comprising:	The limitations are identical and therefore enjoy two-way unpatentability
providing a movable bar assembly coupled to the actuator and to a reference structure; and	providing a movable bar assembly coupled to the actuator and to a reference structure; and	The limitations are identical and therefore enjoy two-way unpatentability
measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.	measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.	The limitations are identical and therefore enjoy two-way unpatentability

Count 2	Our Claim 26
A method for measuring movement of an actuator in a metrology apparatus, the method comprising:	A method for measuring movement of an actuator in a metrology apparatus, the method comprising:
providing a movable bar assembly coupled to the actuator and to a reference structure; and	providing a movable bar assembly coupled to the actuator and to a reference structure; and
measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.	measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.

APPENDIX C

Claim 10 of '160	Our Claim 1
An assembly comprising:	An assembly comprising:
an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;	an actuator with a longitudinal axis having a fixed end, and a free end configured to translate in three orthogonal directions with respect to said fixed end;
a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and	a multiple bar linkage having first and second links mutually constrained to translate with respect to each other, and wherein said first link is fixed to a reference structure and said second link is constrained to translate in a direction generally parallel to the longitudinal axis of said actuator; and
a coupling having first and second ends, said first end being fixed to said actuator proximate to a free end of said coupling, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.	a coupling having first and second ends, said first end being fixed to said actuator proximate to a free end of said coupling, and said second end being fixed to said second link, the coupling adapted to transmit displacement in a direction substantially parallel to the longitudinal axis of said actuator.

Claim 11 of '160	Our Claim 2
The assembly of claim 10, wherein said actuator has a Z-axis translating section, and an X and Y-axis translating section disposed between said fixed end and said Z-axis translating section.	The assembly of claim 1, wherein said actuator has a z-axis translating section, and an x and y-axis translating section disposed between said fixed end and said z-axis translating section.

Claim 12 of '160	Our Claim 3
The assembly of claim 11, wherein said reference structure is mechanically independent from translation of said z-axis translating section, but mechanically responsive to said X and Y-axis translating section.	The assembly of claim 2, wherein said reference structure is mechanically independent from translation of said z-axis translating section, but mechanically responsive to said x and y-axis translating section.

Claim 13 of '160	Our Claim 4
The assembly of claim 12, wherein said reference structure is fixed to said multiple bar linkage to deflect said multiple bar linkage in X and Y-directions in response to X and Y-deflections of said X and Y-axis translating section.	The assembly of claim 3, wherein said reference structure is fixed to said multiple bar linkage to deflect said multiple bar linkage in X and Y directions in response to X and Y deflections of said x and y-axis translating section.

Claim 14 of '160	Our Claim 5
The assembly of claim 13, wherein said multiple bar linkage further includes a first mirror fixed to at least one of said links of the multiple bar linkage, and a second mirror fixed to another of said links of said multiple bar linkage.	The assembly of claim 4, wherein said multiple bar linkage further includes a first mirror fixed to at least one of said links of the multiple bar linkage, and a second mirror fixed to another of said links of said multiple bar linkage.

Claim 15 of '160	Our Claim 6
The assembly of claim 14, wherein the assembly is adapted to be supported in a chassis, and further wherein said first mirror is disposed in the path of a light beam from a light source mounted on said chassis and is disposed to reflect the light toward said second mirror.	The assembly of claim 5, wherein the assembly is adapted to be supported in a chassis, and further wherein said first mirror is disposed in the path of a light beam from a light source mounted on said chassis and is disposed to reflect the light toward said second mirror.

Claim 26 of '160	Our Claim 14
The apparatus of claim 24, wherein said **measuring device** includes a movable bar assembly coupled to the actuator and to **said** reference structure, said bar assembly having a reflecting surface that is adapted to deflect **said** beam, and wherein said bar assembly is responsive to movement of the actuator so as to change the direction of said deflected beam.	The assembly of claim 1, wherein said **actuator has a z-axis translating section, and an x and y-axis translating section disposed between said fixed end and said z-axis translating section,** wherein said **multiple bar linkage** includes a movable bar assembly coupled to the actuator and to **a** reference structure, said bar assembly having a reflecting surface that is adapted to deflect a beam to create a deflected beam, and wherein said bar assembly is responsive to movement of the actuator so as to change the direction of said deflected beam.

Claim 27 of '160	Our Claim 15
The **apparatus** of claim 26, wherein said bar assembly includes a first link having a first end attached to the actuator and a second end, and a second link defining said reflecting surface and having a first opposed end rotatably attached to said second end and a second opposed end rotatably attached to said reference	The **assembly** of claim 14, wherein said bar assembly includes a first link having a first end attached to the actuator and a second end, and a second link defining said reflecting surface and having a first opposed end rotatably attached to said second end and a second opposed end rotatably attached to said reference

Claim 27 of '160	Our Claim 15
structure.	structure.

Claim 28 of '160	Our Claim 16
The **apparatus** of claim 26, wherein said reference structure is tubular and generally surrounds the actuator.	The **assembly** of claim 14, wherein said reference structure is tubular and generally surrounds the actuator.

Claim 29 of '160	Our Claim 17
The **apparatus** of claim 28, wherein said reference structure is configured to allow said light beam and said deflected beam to pass therethrough.	The **assembly** of claim 16, wherein said reference structure is configured to allow said light beam and said deflected beam to pass therethrough.

Claim 30 of '160	Our Claim 18
The **apparatus** of claim 29, wherein said reference structure has an inner surface.	The **assembly** of claim 17, wherein said reference structure has an inner surface.

Claim 31 of '160	Our Claim 19
The **apparatus** of claim 30, further including a reflective surface fixed to said inner surface to steer said beam toward said reflecting surface.	The **assembly** of claim 18, further including a reflective surface fixed to said inner surface to steer said beam toward said reflecting surface.

Claim 32 of '160	Our Claim 20
The **apparatus** of claim 26, wherein said bar assembly includes a link having opposed ends, a first opposed end rotatably attached to the actuator and a second opposed end rotatably attached to said reference structure.	The **assembly** of claim 14, wherein said bar assembly includes a link having opposed ends, a first opposed end rotatably attached to the actuator and a second opposed end rotatably attached to said reference structure.

Claim 33 of '160	Our Claim 21
The **apparatus** of claim 26, wherein said bar assembly comprises a four bar linkage including first and second reflecting surfaces, said surfaces disposed to reflect light such that the incoming and outgoing beams are generally parallel.	The **assembly** of claim 14, wherein said bar assembly comprises a four bar linkage including first and second reflecting surfaces, said surfaces disposed to reflect light such that the incoming and outgoing beams are generally parallel.

Claim 40 of '160	Our Claim 26
A method for measuring movement of an actuator in a metrology apparatus, the method comprising:	A method for measuring movement of an actuator in a metrology apparatus, the method comprising:
providing a movable bar assembly coupled to the actuator and to a reference structure; and	providing a movable bar assembly coupled to the actuator and to a reference structure; and

Claim 40 of '160	Our Claim 26
measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.	measuring, in response to movement of the actuator, movement of said movable bar assembly, wherein movement of said movable bar assembly is indicative of movement of the actuator.

Claim 41 of '160	Our Claim 27
The method of claim 40, wherein said movable bar assembly includes a first link having a first end attached to the actuator and a second end, and a second link defining **said** reflecting surface and having a first opposed end rotatably attached to said second end and a second opposed end rotatably attached to said reference structure.	The method of claim 26, wherein said movable bar assembly includes a first link having a first end attached to the actuator and a second end, and a second link defining **a** reflecting surface and having a first opposed end rotatably attached to said second end and a second opposed end rotatably attached to said reference structure.

Claim 42 of '160	Our Claim 29
An apparatus for measuring movement of an actuator, the apparatus comprising:	An apparatus for measuring movement of an actuator, the apparatus comprising:
an optical measuring device including a source of electromagnetic radiation that generates a beam;	an optical measuring device including a source of electromagnetic radiation that generates a beam;
a reference structure coupled to at least a portion of the actuator;	
a sensor that detects a position of said beam; and	a sensor that detects a position of said beam; and

Claim 42 of '160	Our Claim 29
wherein the actuator is movable in three orthogonal directions but cannot move said reference structure in at least one of the three orthogonal directions, and wherein, in response to movement of the actuator, said optical measuring device changes the position of said beam.	**wherein, in response to movement of the actuator, said optical measuring device changes the position of said beam further including a reference frame wherein said reference frame has a longitudinal axis that is generally co-linear with the longitudinal axis of the actuator.**

Claim 44 of '160	Our Claim 30
The apparatus of claim 43, wherein said measuring device includes a movable bar assembly that is attached to said actuator at a first end of said bar assembly, and is attached to said reference frame at a second end of said bar assembly, and wherein said bar assembly defines a reflecting surface that reflects said beam towards said sensor.	The apparatus of claim 29, wherein said measuring device includes a movable bar assembly that is attached to said actuator at a first end of said bar assembly, and is attached to said reference frame at a second end of said bar assembly, and wherein said bar assembly defines a reflecting surface that reflects said beam towards said sensor.

Claim 45 of '160	Our Claim 31
The apparatus of claim 44, wherein said reference frame includes an inner surface and said measuring device further comprises a reflective surface fixed to said inner surface that steers said beam towards said reflecting surface, said reflecting surface deflecting said beam towards said sensor.	The apparatus of claim 30, wherein said reference frame includes an inner surface and said measuring device further comprises a reflective surface fixed to said inner surface that steers said beam towards said reflecting surface, said reflecting surface deflecting said beam towards said sensor.

Claim 46 of '160	Our Claim 32
The apparatus of claim 44, wherein said reference frame is configured to allow said beam and said deflected beam to pass therethrough.	The apparatus of claim 30, wherein said reference frame is configured to allow said beam and said deflected beam to pass therethrough.

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Examiner : Daniel Sean Larkin

Title : Apparatus and Method for Isolating and Measuring Movement in Metrology Apparatus

Commissioner for Patents
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Alexandria, VA 22313-1450

Attached to this facsimile communication cover sheet is an Amendment, Request for Interference, and Request for Continuation Examination, faxed this 17th day of May 2006, to the United States Patent and Trademark Office.

Respectfully submitted,

Date: May 17, 2006

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